REMARKS

Claims 1-35 are currently pending in the subject application and are presently under consideration. Claims 1, 6, 9-11, 20, 28 and 33-35 have been amended as shown on pp. 2-8 of the Reply. Claim 5 has been canceled.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Rejection of Claims 1-5, 11-20, 28 and 30-35 Under 35 U.S.C. §103(a)

In the Final Office Action dated July 30, 2007, claims 1-5, 11-20, 28 and 30-35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gligor *et al.* (US Patent 6,973,187) in view of Bright *et al.* (US Patent 4,893,339). It is respectfully requested that this rejection should be withdrawn for at least the following reasons. Gligor *et al.* and Bright *et al.*, individually or in combination, do not teach or suggest each and every element as set forth in the subject claims.

> To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *See* MPEP §706.02(j). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicants' disclosure. *See In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The claimed subject matter relates to a first code that is designed within the noise model, and performs various algebraic transformations on such first code to create a second code. Upon transforming the first code into the second code, the second code will appear to be random to a computationally bounded adversary. Therefore an adversarial attack on the second code will essentially be a noise attack on the first code, as the attack will be randomly distributed across the first code. Randomly distributing the attack across the first code allows the code to act as it

was designed – with respect to random noise. Thus the first code can be associated with error correction/detection properties when random noise is applied to the first code.

Independent claims 1, 20, 28 and 33-35 recite a system that facilitates efficient code construction, comprising: *a component that receives a first code designed in a noise model,...; and a transformation component that transforms the first code to a new code that has essentially same length parameters as the first code but is hidden to a computationally bounded adversary, ...,* ***wherein the new code acts as a protective wrapping of the first code, such that an attack on the new code by the computationally bounded adversary would appear as a noise attack on the first code; and wherein the first code designed in the noise model utilizes the algorithms to correct the noise errors with a high success rate****; and a decoder that determines the first code from the new code,....* Gligor *et al.* and Bright *et al.*, individually or in combination, do not expressly or inherently disclose the aforementioned novel aspects of applicants' claimed subject matter as recited in the subject claims.

Gligor *et al.* discloses a method for providing both data confidentiality and integrity for a message. The method includes receiving an input plaintext string and padding it as necessary such that its length is a multiple of 1 bits; partitioning the input plaintext string a length that is a multiple of 1 bits into a plurality of equal-size blocks of 1 bits in length; creating an MDC block of 1 bits in length that includes the result of applying a non-cryptographic Manipulation Detection Code (MDC) function to the plurality of the equal-size blocks; making one and only one processing pass with a single cryptographic primitive over each of the equal-size blocks and the MDC block to create a plurality of hidden ciphertext blocks each of 1 bits in length; and performing a randomization function over the plurality of hidden ciphertext blocks to create a plurality of output ciphertext blocks each of 1 bits in length. (*See* col. 6, lines 37-53).

In contrast, applicants' claimed subject matter discloses a system that includes a code generator/encoder that creates a code 1 designed in the noise model. Code 1 is delivered to a code hiding module that includes a random number generator. The code hiding module effectively hides code 1 *via* randomizing data that employs code 1, thereby not enabling an adversary to determine a location of critical bits to attack. More particularly, the code hiding module utilizes the random number generator to perform algebraic transformations on data utilizing code 1. A code 2 results from these algebraic transformations, wherein the code 2 is a

transformed version of the code 1.

Code 2 is then received by a decoder that can decode code 2 and determine the code 1. Thus, code 2 can be viewed as a protective wrapping of code 1 as illustrated with respect to Fig. 1. The decoder has access to algorithms utilized by the code hiding module, and can thus decode code 2 and determine code 1. Furthermore, if an adversary had directed an attack on code 2, upon decoding such adversarial attack would appear as a noise attack on code 1. Thereafter, as code 1 includes algorithms utilized to correct noise errors with high probability, such errors are corrected with a high success rate when compared to conventional codes designed in the adversarial model. (*See* pg. 7, line15-pg. 8, line 22).

Gligor *et al.* does not expressly or inherently disclose a system that generates a first code designed in a noise model, wherein the first code includes algorithms utilized to correct noise errors with high probability. Gligor *et al.* simply provides processing equal-size blocks and the MDC block by an encryption scheme and a block cipher using a first secret key. Then, each of the hidden ciphertext blocks is combined with a corresponding element to create a set of output blocks of the ciphertext. (*See* col. 6, lines 54-67).

Furthermore, Gligor *et al.* does not disclose utilizing codes designed against random attacks (*i.e.*, codes designed in a noise model), Gligor *et al.* discloses utilizing codes designed against adversarial attacks (*i.e.*, codes designed in an adversarial model). Applicants' claimed subject matter discloses utilizing codes designed in a noise model. Because random noise attacks are not concentrated on a particular location within a code, whereas adversarial attacks are designed to destroy the mathematical property of the code, codes designed against random attacks are associated with performance that is roughly twice better than codes designed against adversarial attacks, as error detection and correction codes are well equipped to detect and recover data altered due to random noise. (*See* pg. 3, lines 3-14).

Accordingly, Gligor *et al.* is silent with regard to a system that facilitates efficient code construction …, ***wherein the new code acts as a protective wrapping of the first code, such that an attack on the new code by the computationally bounded adversary would appear as a noise attack on the first code; and wherein the first code designed in the noise model utilizes the algorithms to correct the noise errors with a high success rate***.

Bright *et al.* does not cure the deficiencies of Gligor *et al.* with respect to independent

claims 1, 20, 28 and 33-35. Bright *et al.* discloses a synchronous secure communication system wherein an information signal is encrypted in an encryption means. The encrypted signal is compressed to allow the insertion of a synchronization signal, and the combined signals are transmitted. At the receiver, the synchronization signal is extracted and used to synchronize the receiver to the incoming data stream thereby improving receiver sensitivity and range. (*See* col. 2, lines 24-35). Bright *et al.* further discloses processing a signal through an encryption device to produce a random or pseudo-random signal, which appears noise-like to an unauthorized receiver. (*See* col. 1, lines 12-18). Whereas, applicants' claimed subject matter discloses utilizing codes designed in a noise model, such that the codes contain error detection and correction codes that are well equipped to detect and recover data altered due to random noise. (*See* pg. 3, lines 3-14).

Accordingly, Bright *et al.* is also silent with respect to a system that facilitates efficient code construction …, ***wherein the new code acts as a protective wrapping of the first code, such that an attack on the new code by the computationally bounded adversary would appear as a noise attack on the first code; and wherein the first code designed in the noise model utilizes the algorithms to correct the noise errors with a high success rate***.

In view of the aforementioned deficiencies of Gligor *et al.* and Bright *et al.*, it is respectfully submitted that this rejection be withdrawn with respect to independent claims 1, 20, 28 and 33-35 (and claims 2-5, 11-19, 30, 31 and 32 which respectively depend there from).

II. Rejection of Claims 6-8, 21-23 and 29 Under 35 U.S.C. §103(a)

In the Final Office Action dated July 30, 2007, claims 6-8, 21-23 and 29 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gligor *et al.* in view of Bright *et al.*, and further in view of Bohnke *et al.* (US Patent 6,557,139). It is respectfully submitted that this rejection should be withdrawn for the following reasons. Gligor *et al.*, Bright *et al.* and Bohnke *et al.,* individually or in combination, do not teach or suggest each and every element set forth in the subject claims. In particular, Bohnke *et al.* does not make up for aforementioned deficiencies of Gligor *et al.* and Bright *et al.* with respect to independent claims 1, 20 and 28 (which claims 6-8, 21-23 and 29 depend respectively there from). Thus, the claimed subject matter as recited in claims 6-8, 21-23 and 29 is not obvious over the combination of Gligor *et al.*, Bright *et al.* and

Bohnke *et al.* Therefore, it is respectfully submitted that this rejection be withdrawn.

III. Rejection of Claims 9, 10 and 25 Under 35 U.S.C. §103(a)

In the Final Office Action dated July 30, 2007, claims 9, 10 and 25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gligor *et al.* in view of Bright *et al.*, and further in view of Guruswami (Foundations of Computer Science, 2001, Proceedings, 42nd IEEE Symposium, Pages: 658-667, ISBN: 0-7695-1116-3). It is respectfully submitted that this rejection should be withdrawn for the following reasons. Gligor *et al.*, Bright *et al.,* and Guruswami, individually or in combination, do not teach or suggest each and every element set forth in the subject claims. In particular, Guruswami does not make up for aforementioned deficiencies of Gligor *et al.* and Bright *et al.* with respect to independent claims 1 and 20 (which claims 9, 10 and 25 depend respectively there from). Thus, the claimed subject matter as recited in claims 9, 10 and 25 is not obvious over the combination of Gligor *et al.*, Bright *et al.* and Guruswami. Therefore, it is respectfully submitted that this rejection be withdrawn.

IV. Rejection of Claim 24 Under 35 U.S.C. §103(a)

In the Final Office Action dated July 30, 2007, claim 24 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Gligor *et al.* and Bright *et al.*, in view of Bohnke *et al.*, and further in view of Guruswami (Foundations of Computer Science, 2001, Proceedings, 42nd IEEE Symposium, Pages: 658-667, ISBN: 0-7695-1116-3). It is respectfully submitted that this rejection should be withdrawn for the following reasons. Gligor *et al.*, Bright *et al.*, Bohnke *et al.,* and Guruswami, individually or in combination, do not teach or suggest each and every element set forth in the subject claims. In particular, Guruswami does not make up for aforementioned deficiencies of Gligor *et al.*, Bright *et al.* and Bohnke *et al.* with respect to independent claim 20 (which claim 24 depends respectively there from). Thus, the claimed subject matter as recited in claim 24 is not obvious over the combination of Gligor *et al.*, Bright *et al.*, Bohnke *et al.* and Guruswami. Therefore, it is respectfully submitted that this rejection be withdrawn.

V. Rejection of Claims 26 and 27 Under 35 U.S.C. §103(a)

In the Final Office Action dated July 30, 2007, claims 26 and 27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gligor *et al.* in view of Bright *et al.*, and further in view of Lee *et al.* (U.S. Patent 6,792,542). It is respectfully submitted that this rejection should be withdrawn for the following reasons. Gligor *et al.*, Bright *et al.,* and Lee *et al.*, individually or in combination, do not teach or suggest each and every element set forth in the subject claims. In particular, Lee *et al.* does not make up for aforementioned deficiencies of Gligor *et al.* and Bright *et al.* with respect to independent claim 20 (which claims 26 and 27 depend respectively there from). Thus, the claimed subject matter as recited in claims 26 and 27 is not obvious over the combination of Gligor *et al.*, Bright *et al.* and Lee *et al.* Therefore, it is respectfully submitted that this rejection be withdrawn.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP588US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,
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